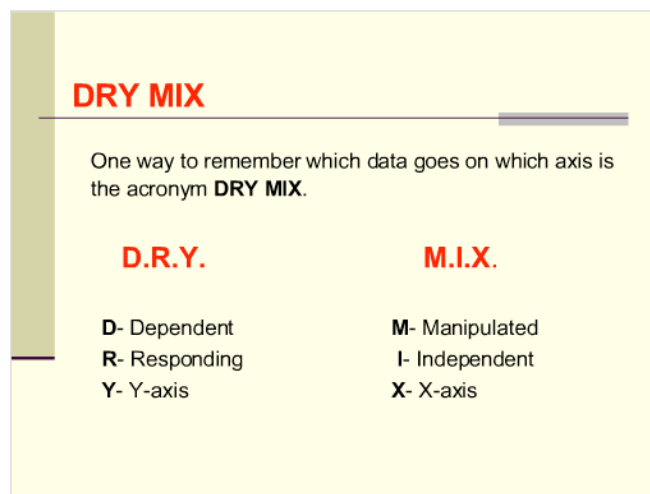
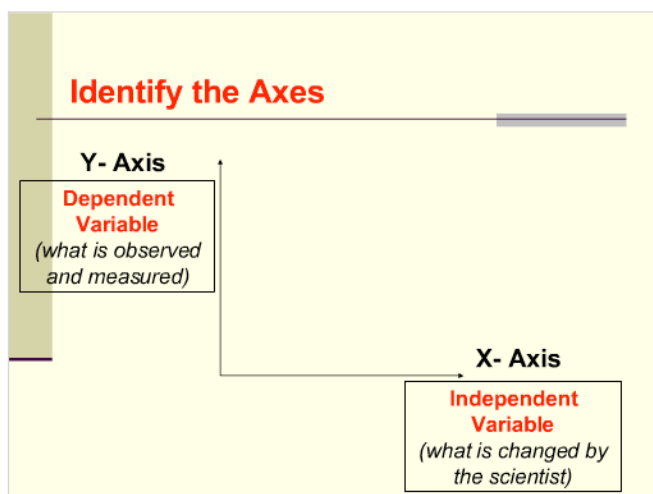


Drawing Graphs: *Step-by-Step Process*

Name: _____

- I. **The first step is to identify the dependent and independent variables.** You have to take a look at what is being done in the experiment and figure out if the scientist is in control of the variable, or if she is merely measuring it.



Pictures taken from <http://www.slideshare.net/mrmularella/how-to-create-bar-and-line-graphs> (Oct. 2009)

Identify the Dependent and independent variables in each of the following experiments

Ex. 1: A student wants to see how practice exams affect her grade in class. Before the first test she takes one practice test and gets feedback from her teacher. Before the second test she takes two practice tests and asks the teacher for feedback both times. Again, before the third test she takes three practice tests and gets feedback each time. She records the grade that she got on each test and the number of practice tests that she took before the test in a notebook.

Independent variable = _____ Dependent variable = _____

Ex. 2: A student explores the changes in average temperature throughout the month of March. During the month the student went outside at noon on certain days and took the temperature. The date and temperature were recorded in a notebook.

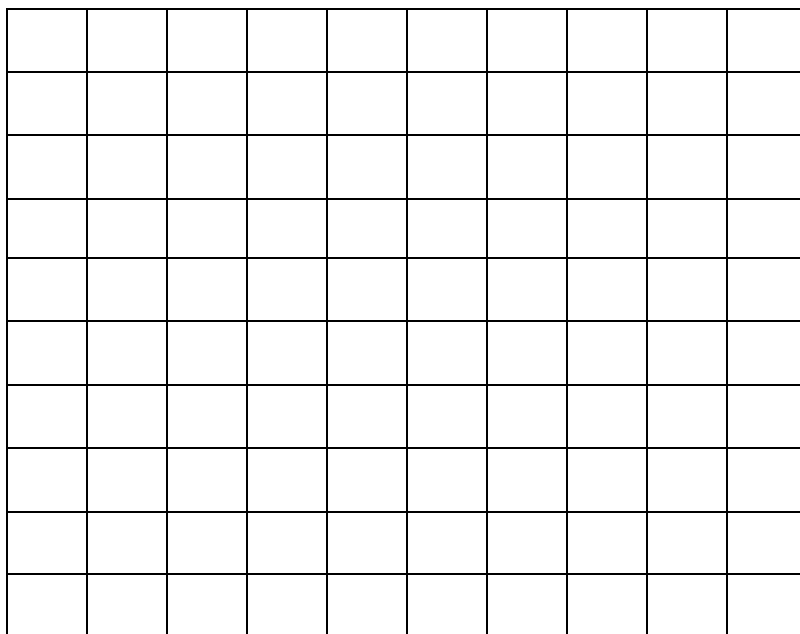
Independent variable = _____ Dependent variable = _____

II. **The second step is to create a scale for your data.**

- You need to look at all of the data collected to find the HIGHEST value in the Independent variable column.
- Count the number of boxes available in your graph to put a scale.
- Divide the highest value in the data table by the number of boxes.
- Round up your answer to a number that is easy to work with. (for example, if you get an answer of 0.17 round it up to 0.2 or 0.25. It is much easier to count by 0.2 than it is to count by 0.17)
- Start by putting a zero in at the origin of your graph. Then put in the number you got in Step D on the first line. Continue counting by this number until you reach the end of your scale. (for example, 0, 0.2, 0.4, 0.6, 0.8, 1.0, etc.)
- Repeat this process for the data on the Dependent axis.

Ex. 1. The data below shows the data taken by the student measuring the affect of practice tests on class grade. Use the steps shown above to create a scale for each axis. Be sure to label your axis and put units in too.

Grade on Test (%)	Practice (# of tests taken)
56	0
65	1
76	2
88	3
97	4



Pick two points that fall on the line that you drew and write their ordered pairs below:

$(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$
 (x_1, y_1) (x_2, y_2)

Now use those two points to calculate the slope for the line in this graph: $\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$

Slope =

Does your slope have units? Be sure to write them next to the value for the slope.
What does the slope mean? What does the slope tell you?

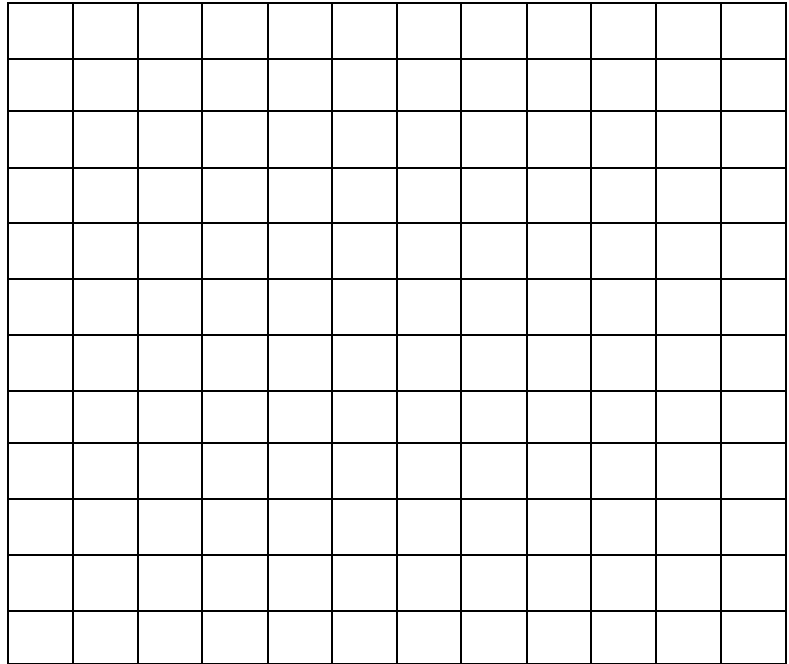
What was the Y-intercept for this graph? (Where does the line of best fit that you drew cross the Y-axis?)

What does the Y-intercept mean?

Should your Y-intercept be (0,0)? Explain.

Ex. 2. The data below shows the results of taking the temperature during the month of March. Use the steps shown above to create a scale for each axis. Be sure to label your axis and put units in too.

Day (date)	Temp. (°C)
1	22
9	25
17	29
23	33
31	36



Pick two points that fall on the line that you drew and write their ordered pairs below:

$\left(\underline{\hspace{1cm}}, \underline{\hspace{1cm}} \right)$ $\left(\underline{\hspace{1cm}}, \underline{\hspace{1cm}} \right)$
 $\left(x_1, y_1 \right)$ $\left(x_2, y_2 \right)$

Now use those two points to calculate the slope for the line in this graph: $\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$

Slope =

Does your slope have units? Be sure to write them next to the value for the slope.
 What does the slope mean? What does the slope tell you?

What was the Y-intercept for this graph? (Where does the line of best fit that you drew cross the Y-axis?)

What does the Y-intercept mean?

Should your Y-intercept be (0,0)? Explain.